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TITLE: STERILIZING WASHER

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C02F 1/50; C02F 1/76

ABSTRACT:

PROBLEM TO BE SOLVED: To provide a sterilizing washer which is able to be set up on a corridor or in a sick ward of a hospital where no water service is available and of which problems of rusting in a sewer pipe occurred by sewage is so solved that is long lasting by installing pumping systems and liquid tanks.

SOLUTION: This sterilizing washer is composed of a main circuit having a pumping system 4, a liquid tank 3, water treatment devices 5 and 6 and a sub circuit Y having a liquid tank 3 for an electrolyte whose main component is at least saline solution, an electrolytic bath 9 and a pumping system 10. The sub circuit Y produces high concentration hypochlorous acid (dissolved chloride) and mixes it at a certain rate to gain sterilizing liquid supplied to the main circuit, and wasted water used for sterilizing through the main circuit is recovered to and stored in the liquid tank 3 to be retreated and circulated for usage when the time comes.

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CLAIMS

[Claim(s)]

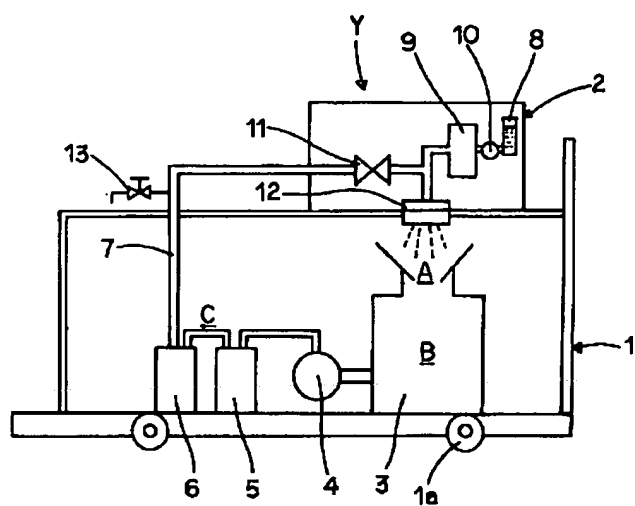
[Claim 1] In the equipment which carries out sterilization washing of a finger, the instrument, etc. with the hypochlorous acid (dissolved chlorine) generated by electrolyzing the electrolytic solution which uses a sodium chloride as a principal component The main circuit which has the water treatment for disassembling a liquid-sending means, a cistern, and a hypochlorous acid (dissolved chlorine) into a chlorine ion at least, It consists of a subcircuit which has the depot of the electrolytic solution which uses saturation brine as a principal component at least, a cell, and a liquid-sending means. the high concentration hypochlorous acid (dissolved chlorine) generated in the subcircuit -- a main circuit -- a fixed rate -- mixing -- sterilization -- the washing station for sterilization characterized by supplying service water, collecting and storing liquid to a cistern, carrying out rework circulation of the wastewater with which sterilization washing was presented in the main circuit at the time of use, and making it use it.

[Claim 2] The washing station for sterilization according to claim 1 which carried the above-mentioned washing station for sterilization on the truck of a portable type.

[Claim 3] The washing station for sterilization according to claim 1 or 2 said whose water treating units are a grain and the filter which makes activated carbon, such as powdered or fibrous, a subject.

[Claim 4] The washing station for sterilization according to claim 1 to 3 with which said water treating unit consists of a grain and a filter from which activated carbon, such as powdered or fibrous, and the insoluble matter 0.1 microns or more are removable at least.

[Translation done.]

Drawing selection **Representative drawing**

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the washing station for sterilization of a portable type especially about the washing station for sterilization which carries out sterilization disinfection of a finger and the instrument using a hypochlorous acid (dissolved chlorine) in a dental clinic, a hospital, etc. for prevention of a hospital infection.

[0002]

[Description of the Prior Art] Conventionally, as an approach of sterilizing using a hypochlorous acid (dissolved chlorine), brine was electrolyzed, the hypochlorous acid (dissolved chlorine) was made, and this was diluted and used with tap water. In order that the hypochlorous acid (dissolved chlorine) used for this sterilization washing station may carry out sterilization disinfection of a finger and the instrument extremely for a short time (several seconds), this hypochlorous acid is dozens times the 10-20PPM concentration of this as compared with the hypochlorous acid in tap water (dissolved chlorine). In the conventional sterilization disinfection, also when supplying water to this hypochlorous acid using a waterworks and draining this, the present condition was having stocked sewage with high concentration hypochlorous-acid concentration.

[0003]

[Problem(s) to be Solved by the Invention] Thus, since installation in a location without a waterworks was not able to be performed in the conventional sterilization washing station, the actual condition was being unable to perform use in the passage and sickroom of a hospital without a waterworks. Moreover, since a high-concentration hypochlorous acid (dissolved chlorine) was drained, it also had the big problem that piping of sewerage, surrounding piping, and surrounding components rusted. especially -- piping of sewerage -- rusting -- since the piping work expense by repair is expensive, an improvement is desired. Moreover, when processing and draining a used penetrant remover using activated carbon and the penetrant remover was introduced into direct activated carbon, the life of activated carbon had a trouble of a fall remarkably with the oil of a finger and an instrument, and the organic substance.

[0004] The place which develops this invention in order to solve the conventional trouble, and is made into the purpose is to offer the useful washing station for sterilization which can protract the life of the activated carbon which can install in a passage, a sickroom, etc. of a hospital without a waterworks, and becomes possible [controlling generating to which wastewater Rhine by wastewater rusts as much as possible moreover], and is used for a water treating unit.

[0005]

[Means for Solving the Problem] In the equipment which carries out sterilization washing of a finger, the instrument, etc. with the hypochlorous acid (dissolved chlorine) generated when this invention electrolyzes the electrolytic solution which uses a sodium chloride as a principal component, in order to solve the above-mentioned purpose The main circuit which has the water treatment for disassembling a liquid-sending means, a cistern, and a hypochlorous acid (dissolved chlorine) into a chlorine ion at least, It consists of a subcircuit which has the depot of the electrolytic solution which uses saturation brine as a

principal component at least, a cell, and a liquid-sending means. It is equipment for supplying service water. the high concentration hypochlorous acid (dissolved chlorine) generated in the subcircuit -- a main circuit -- a fixed rate -- mixing -- sterilization -- By collecting and storing liquid to a cistern, rework circulation was carried out, the wastewater with which sterilization washing was presented in the main circuit was used at the time of use, and it considered as the movable washing station for sterilization by always not needing water supply.

[0006] This water treating unit is a grain and a filter which makes activated carbon, such as powdered or fibrous, a subject, and it is desirable a grain and that said water treating unit consists of powdered or a filter from which activated carbon, such as fibrous, and the insoluble matter 0.1 microns or more are removable at least.

[0007]

[Example] Drawing 1 is one example of the washing station for sterilization of the portable type in this invention. Install the subcircuit Y which has the liquid-sending means 4, a cistern 3, the depot 8 of the electrolytic solution which uses as a principal component the main circuit X which has the water treating units 5 and 6 which disassemble a hypochlorous acid (dissolved chlorine) into a chlorine ion, and brine, a cell 9, and the liquid-sending means 10 in drawing 1 on the truck 1 which has wheel 1a, tap water is 20 (L) Put into this cistern 3, and it is specified quantity ON **** about the electrolytic solution to a depot 8.

[0008] This water treating unit 5 is a grain and a filter which makes activated carbon, such as powdered or fibrous, a subject, and a water treating unit 6 consists of a grain and a filter from which activated carbon, such as powdered or fibrous, and the insoluble matter 0.1 microns or more are removable. the inside of drawing, and 7 -- the tube for liquid sending, and 11 -- the amount of water of a main circuit X -- a regulator valve and 12 -- the penetrant remover jet section of the electrolysis neutral generation machine 2 -- it is -- 13 -- the tube for liquid sending -- on the way -- it is the effluent closing motion bulb boiled and prepared.

[0009] And its hand was washed by having switched on the power source which is not illustrated, PH of three points and the hypochlorous-acid (dissolved chlorine) value of the penetrant remover (A point) which comes out of 1 time, 20 times, 50 times, and 100 times of sterilization washing stations, the liquid-storage in a cistern 3 (B point), and liquid sending from the outlet (C) of a water treating unit 5 were investigated, and the result of Table 1 was obtained. In addition, the subcircuit Y which has a depot 8, a cell 9, and the liquid-sending means 10 used the electrolysis neutral water generation-machine (AMENI clean FJ-W04 F 1) by Matsushita Electric Co., Ltd. Moreover, granular-active-carbon WHA40-80L by Takeda Chemical Industries, Ltd. which disassembles a hypochlorous acid (dissolved chlorine) into a chlorine ion efficiently was used for activated carbon.

[0010]

[Table 1]

回 数	P H			次亜塩素酸 (p p m)		
	A	B	C	A	B	C
1	6.5	7.2	7.3	19	1	0
20	6.6	6.8	7.4	19	12	0
50	6.6	6.7	7.4	20	16	0
100	6.7	6.7	7.4	20	18	0

[0011] From the above-mentioned result, by carrying out through wastewater of the water treating units 5 and 6 for waste fluid, hypochlorous-acid concentration is set to 0, it is canceled and the problem of the rust of sewerage piping by waste fluid can pour waste fluid to sewerage easily. With a cistern 3, there is also little activated carbon of water treating units 5 and 6, and it becomes long lasting by disassembly of the oil and the organic substance of a hypochlorous acid (residue chlorine), and processing of a high-

concentration hypochlorous acid (residue chlorine) can use it effectively.

[0012]

[Effect of the Invention] According to this invention, it can install also in the passage and sickroom of a hospital without a waterworks by forming a liquid-sending means and a cistern so that clearly from the above thing. Moreover, when a water treating unit was constituted by activated carbon etc. and drained waste fluid after water treatment, the problem of the rust of piping, such as sewerage by wastewater, has been solved at once. Furthermore, the waste fluid used by the cistern is collected once, oil and the organic substance decompose with a hypochlorous acid (residual chlorine) within a cistern, and it has the effectiveness which was [delay / by consumption and volatilization of chlorine / the life of the activated carbon of a water treating unit etc.] excellent.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the explanatory view having shown one example of the washing station for portable type sterilization in this invention.

[Description of Notations]

- 1 Truck
- 2 Electrolysis Neutral Water Generation Machine
- 3 Cistern
- 4 Liquid-Sending Means
- 5 Water Treating Unit (Activated Carbon)
- 6 Water Treating Unit
- 7 Tube for Liquid Sending
- 8 Depot
- 9 Cell
- 10 Liquid-Sending Means
- 11 Main Circuit -- Amount of Water -- Regulator Valve
- (A) The penetrant remover which comes out of a sterilization washing station
- (B) Liquid-storage in a cistern 3
- (C) Liquid sending of the outlet of a water treating unit 5
- (X) Main circuit
- (Y) A subcircuit

[Translation done.]

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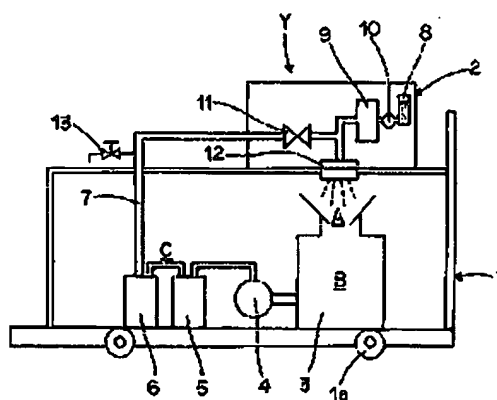
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(54) 【発明の名称】 殺菌用洗浄装置

(57)【要約】

【課題】 送液手段、貯液槽などを設けることにより水道がない病院の廊下・病室にも設置でき、排水による下水道の配管の詰の問題も解決した長寿命の殺菌用洗浄装置を提供する。

【解決手段】 送液手段4、貯液槽3、水処理装置5、6を有する主回路Xと、少なくとも食塩水を主成分とする電解液の貯留槽8、電解槽9、送液手段10を有する副回路Yから構成され、副回路にて生成された高濃度次亜塩素酸（溶存塩素）を主回路に定率で混合して殺菌用水を供給し、主回路で殺菌洗浄に供された排水を貯液槽に回収して貯液し、使用時に再処理循環させて使用するようにした。



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【特許請求の範囲】

【請求項1】 塩化ナトリウムを主成分とする電解液を電気分解することにより生成する次亜塩素酸（溶存塩素）により手指、器具等を殺菌洗浄する装置において、少なくとも送液手段、貯液槽、次亜塩素酸（溶存塩素）を塩素イオンに分解するための水処理を有する主回路と、少なくとも飽和食塩水を主成分とする電解液の貯留槽、電解槽、送液手段を有する副回路とからなり、副回路にて生成された高濃度次亜塩素酸（溶存塩素）を主回路に定率で混合して殺菌用水を供給し、主回路で殺菌洗浄に供された排水を貯液槽に回収して貯液し、使用時に再処理循環させて使用するようにしたことを特徴とする殺菌用洗浄装置。

【請求項2】 上記した殺菌用洗浄装置を移動式の台車上に搭載した請求項1記載の殺菌用洗浄装置。

【請求項3】 前記水処理装置が粒状、粉末状又は繊維状等の活性炭を主体とするフィルタである請求項1又は2記載の殺菌用洗浄装置。

【請求項4】 前記水処理装置が少なくとも粒状、粉末状又は繊維状等の活性炭及び0.1ミクロン以上の不溶物質を除去できる濾過器より構成される請求項1乃至3記載の殺菌用洗浄装置。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、歯科医院・病院等において院内感染の予防のため、次亜塩素酸（溶存塩素）を利用して手指、器具を殺菌消毒する殺菌用洗浄装置に関し、特に、移動式の殺菌用洗浄装置に関する。

【0002】

【従来の技術】従来、次亜塩素酸（溶存塩素）を利用して殺菌する方法としては、食塩水を電気分解して次亜塩素酸（溶存塩素）を作り、これを水道水で希釈して使用していた。この殺菌洗浄装置に使用される次亜塩素酸（溶存塩素）は、極めて短時間（数秒）に手指、器具を殺菌消毒するため、この次亜塩素酸は、水道水中の次亜塩素酸（溶存塩素）と比較すると、数十倍の10～20PPM濃度である。従来の殺菌消毒においては、この次亜塩素酸に水道を利用して水を供給し、これを排水する場合も下水へ高濃度次亜塩素酸濃度のまま放流しているのが現状であった。

【0003】

【発明が解決しようとする課題】このように従来の殺菌洗浄装置では、水道がない場所での設置ができなため、水道がない病院の廊下・病室での使用ができないのが実情であった。また、高濃度の次亜塩素酸（溶存塩素）が排水されるために、下水道の配管、周辺の配管、周辺の部品が錆びるという大きな問題も有していた。特に、下水道の配管の錆びは修理による配管工事費が高額なため改善が望まれている。また、活性炭を利用して使用済みの洗浄液を処理して排水する時、洗浄液を直接活

性炭に導入すると、手指・器具の油分、有機物により活性炭の寿命は著しく低下という問題点があった。

【0004】本発明は、従来の問題点を解決するために開発したものであり、その目的とするところは、水道がない病院の廊下や病室などにも設置でき、しかも、排水による排水ラインの錆びの発生を極力抑制することが可能となり、また、水処理装置に用いる活性炭等の寿命を長期化することができる有用な殺菌用洗浄装置を提供することにある。

【0005】

【課題を解決するための手段】上記の目的を解決するため、本発明は、塩化ナトリウムを主成分とする電解液を電気分解することにより生成する次亜塩素酸（溶存塩素）により手指、器具等を殺菌洗浄する装置において、少なくとも送液手段、貯液槽、次亜塩素酸（溶存塩素）を塩素イオンに分解するための水処理を有する主回路と、少なくとも飽和食塩水を主成分とする電解液の貯留槽、電解槽、送液手段を有する副回路とからなり、副回路にて生成された高濃度次亜塩素酸（溶存塩素）を主回路に定率で混合して殺菌用水を供給するための装置であり、主回路で殺菌洗浄に供された排水を貯液槽に回収して貯液し、使用時に再処理循環させて使用し、常時給水を必要としないことにより移動可能な殺菌用洗浄装置とした。

【0006】この水処理装置は、粒状、粉末状又は繊維状等の活性炭を主体とするフィルタであり、また、前記水処理装置が少なくとも粒状、粉末状又は繊維状等の活性炭及び0.1ミクロン以上の不溶物質を除去できる濾過器より構成するのが好ましい。

【0007】

【実施例】図1は、本発明における移動式の殺菌用洗浄装置の一実施例である。図1において、車輪1aを有する台車1の上に送液手段4、貯液槽3、次亜塩素酸（溶存塩素）を塩素イオンに分解する水処理装置5、6を有する主回路Xと、食塩水を主成分とする電解液の貯留槽8、電解槽9、送液手段10を有する副回路Yを設置し、この貯液槽3には水道水を20（L）入れ、貯留槽8に電解液を所定量入れた。

【0008】この水処理装置5は、粒状、粉末状又は繊維状等の活性炭を主体とするフィルタであり、水処理装置6は、粒状、粉末状又は繊維状等の活性炭及び0.1ミクロン以上の不溶物質を除去できる濾過器より構成される。図中、7は送液用チューブ、11は主回路Xの水圧調整弁、12は電解槽中性生成機2の洗浄液噴出部であり、13は送液用チューブの途中に設けた排水開閉バルブである。

【0009】そして、図示しない電源を入れ、手洗いを実施し、1回、20回、50回、100回の殺菌洗浄装置から出る洗浄液（A点）、貯液槽3内の貯液（B点）、水処理装置5の出口（C）からの送液の3点のP

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Hと次亜塩素酸（溶存塩素）値を調査し、表1の結果を得た。なお、貯留槽8、電解槽9、送液手段10を有する副回路Yは、松下電器株式会社製の電解中性水生成機（アメニクリーンFJ-W04F1）を使用した。また、活性炭は、次亜塩素酸（溶存塩素）を効率的に塩素*

*イオンに分解する武田薬品工業株式会社製の粒状活性炭 WHA40-80Lを使用した。
【0010】
【表1】

図 数	P H			次亜塩素酸 (ppm)		
	A	B	C	A	B	C
1	6.5	7.2	7.3	19	1	0
20	6.5	6.8	7.4	19	12	0
50	6.6	6.7	7.4	20	18	0
100	6.7	6.7	7.4	20	18	0

【0011】上記の結果から、廃液を水処理装置5、6を巡し排水することにより、次亜塩素酸濃度が0となり、廃液による下水道配管の錆の問題は解消され、容易に廃液を下水道へ流すことができる。水処理装置5、6の活性炭も貯液槽3により、高濃度の次亜塩素酸（残置塩素）の処理が少なく、かつ次亜塩素酸（残置塩素）の油分・有機物の分解により長寿命になり、有効に使用で

※【図1】本発明における移動式殺菌用洗浄装置の一実施例を示した説明図である。

【符号の説明】

- 1 台車
 - 2 電解中性水生成機
 - 3 貯液槽
 - 4 送液手段
 - 5 水処理装置（活性炭）
 - 6 水処理装置
 - 7 送液用チューブ
 - 8 貯留槽
 - 9 電解槽
 - 10 送液手段
 - 11 主回路水量調整弁
- （A） 殺菌洗浄装置から出る洗浄液
（B） 貯液槽3内の貯液
（C） 水処理装置5の出口の送液
（X） 主回路
（Y） 副回路

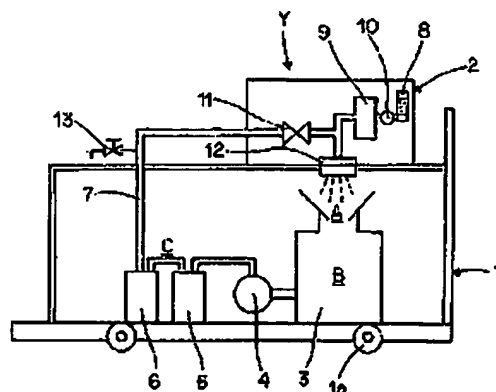
【0012】

【発明の効果】以上のことから明らかなように、本発明によると、送液手段、貯液槽を設けることにより水道がない病院の廊下・病室にも設置できる。また、水処理装置が活性炭等により構成され、廃液を水処理後に排水することにより、排水による下水道などの配管の錆の問題が一挙に解決できた。更に、貯液槽により使用された廃液は、一度回収され、貯液槽内で油分、有機物が次亜塩素酸（残置塩素）により分解し、塩素の消費と揮発により水処理装置の活性炭などの寿命が長期化する等の優れた効果を有する。

【図面の簡単な説明】

※

【図1】



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